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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/707,597	12/23/2003	Jonathan C. Boomgaarden	GEMS 0226 PA	1596

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EXAMINER
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ART UNIT	PAPER NUMBER
2882	

DATE MAILED: 04/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/707,597	BOOMGAARDEN ET AL.	
	Examiner	Art Unit	
	Krystyna Suchecki	2882	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *23 December 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 06/03/04
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to because the details of Figure 2 are obscured by the shading. It is not clear what the lead lines point to, nor is it entirely clear how the parts of the invention are fitted together. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 2, 5-12 and 15-17 are rejected under 35 U.S.C. 102(b) as being anticipated by Sell (US 4,082,955).

4. Regarding Claims 1 and 12, Figures 1, 3 and 7 of Sell teach an x-ray generating assembly comprising: an x-ray source assembly (26) mounted to a mounting element (Figure 7); a primary structural support assembly (20) supporting said x-ray source assembly comprising: a motor element (Columns 12-13 teach the operation of motor drive system with the gear assembly); a gear assembly (260, 261) in communication with said motor element; and an output shaft (200) in communication with said gear assembly such that said output shaft rotates in response to said motor element, said mounting element positioned around said output shaft; and an electromechanical lock (solenoid) engaged to said mounting element such that said electromechanical lock rotates in concert with said mounting element, said electromechanical lock having an engaged condition and a disengaged condition, said electromechanical lock engaging said output shaft when said electromechanical lock is in said engaged condition such that said mounting element rotates with said output shaft, said mounting element said free to rotate about said output shaft when said electromechanical lock is in said disengaged condition (Column 16 and Column 10, lines 8-21).

5. Regarding Claim 2, Sell teaches an x-ray generating assembly, wherein said electromechanical lock moves from said engaged condition to said disengaged condition when said electromechanical lock becomes energized (Column 10, lines 8-21).

6. Regarding Claim 5, Sell teaches an x-ray generating assembly, wherein said x-ray source is suspended from a supporting structure by said output shaft (Figure 7).

7. Regarding Claims 6 and 15, Sell teaches an x-ray generating assembly, further comprising: a controller in communication with said motor element, said controller including logic adapted to control the position of said x-ray source assembly (Column 16, particularly lines 23-24 and Column 17).

8. Regarding Claim 7, 8, 9 16 and 17, Sell teaches an x-ray generating assembly, wherein said output shaft comprises a hollow output shaft (item 200); a source positioning shaft positioned within said output shaft, said source positioning shaft engaged to said x- ray source assembly such that said source positioning shaft rotates with said x-ray source assembly at all times (Column 8, lines 51-58); and a feedback device in communication with both said source positioning shaft and said support assembly such that the position of said x-ray source assembly can be determined at all times (Section E and Section VIII).

9. Regarding Claim 10, Sell teaches an x-ray generating assembly as described in claim 9, wherein said feedback device described is an optical encoder (Section VIII).

10. Regarding Claim 11, Sell teaches an x-ray generating assembly as in claim 9, wherein said feedback device is in communication with said controller (Section VIII).

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

12. Claims 3, 4, 13, 14 and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sell in view of Stock Drive Products ("SDP").

13. Regarding Claims 3, 4, 13, 14 and 18 Sell teaches an x-ray generating assembly and method as above for claims 1 and 12 including a miter gear assembly (Figure 3, items 260 and 261). It is implicit from the spring action of the electromechanical lock (Figure 7) that the back-drive force of the gear assembly is greater than the locking force of the spring and solenoid electromechanical lock.

14. Sell fails to teach the gear assembly comprising a high reduction worm gear assembly including a back-drive force greater than a locking force of said electromechanical lock.

15. SDP teaches the benefits of various types of gears including miter (bevel) and worm gears (Table 1.8). Both gears can be used at right angular meshes for high velocity ratios and high loads (T69). The worm gear offers the additional benefit of being designed to be nonreversible, thereby offering a high back-drive force that is greater than the locking force of a spring. The worm gear also offers high precision in contrast to the miter gear and is a "best choice" for right angle drives (T69).

16. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the worm gear assembly of SDP in the system of Sell since it offers nonreversible, high back-drive force that is greater than the locking force of the spring of Sell. This allows the force of the gear to turn the arm with great strength, and the low force of the spring and solenoid combination of Sell offers a lock that is easily disengaged for manual movement of the x-ray source. The worm gear also offers high precision in contrast to the miter gear and is a "best choice" for right angle drives (SDP, T69).

17. Regarding claims 19 and 20, Sell teaches a method of positioning an x-ray source assembly as described in claim 18, further comprising: monitoring the rotational position of the x-ray source assembly using a feedback device in communication with both the x-ray source assembly and said support assembly and using a controller to automate movement of the x-ray source assembly, said controller in communication with said motor element, said electromechanical lock, and said feedback device (Sections E and VIII).

Conclusion

18. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Patent to Hauck (US 4,501,011) is of interest for also teaching an x-ray generating system having a motor with an output shaft and an electromechanical locking means for driving an x-ray source. Patent to Khutoryansky (US 5,636,259) is of interest for teaching an x-ray generating system wherein a motor drives a shaft so that an x-ray source can spin about the shaft.

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Krystyna Suchecki whose telephone number is (571) 272-2495. The examiner can normally be reached on M-F, 9-5.

20. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Glick can be reached on (571) 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

21. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KS

Craig E. Church
Primary Examiner